

What if ...?

A Science Primer

I wonder ...

Calgary Board of Education Full-Day Kindergarten Professional Learning

Science is:

- engaging in the human pursuit to understand the relationships within the living and nonliving universe
- developing explanations and predictions that can be tested and refined through the process of scientific inquiry
- understanding systems consisting of interconnected living and nonliving components
- understanding static and dynamic balance of matter and energy
- understanding patterns of similarity and diversity
- understanding relationships between structure and function

Science Essence Statements, Curriculum Development Prototyping Guide (2013), Alberta Education

Program Statement: Environment and Community Awareness

Children use their five senses to:

- explore
- investigate
- describe
- sort
- organize/arrange
- recognize similarities and differences
- become aware of the relationship between cause and effect
- make personal sense of the environment

Children explore the design, function and properties of a variety of materials and use simple tools; they explore scientific and aesthetic concepts.

Children explore familiar places and things in the environment and community. They identify familiar shapes, symbols and sounds and recognize seasonal changes. They recognize familiar animals in their surroundings.



We can foster scientific knowledge by thoughtfully preparing rich environments, indoors and out; by introducing a scientific vocabulary during engaging activities and long-term studies or themes; and by providing many opportunities for children to problem solve and investigate.

Science, like the very air around us, can infuse life into our programs.

(NAEYC, *Young Children*, November, 2009, p. 10)

Build language and scientific literacy:

- add science vocabulary to word displays
- model the use of scientific vocabulary as children interact with engaging materials and planned experiences (e.g. estimate, predict, habitat)
- encourage children to use science vocabulary
- encourage meaningful conversations and expand on what children say
- provide many opportunities for using science-related language and engaging in hands-on experiences that deepen children's understanding of the words
- ask open-ended questions that model the inquiry process, promote predicting skills and teach problem-solving skills: "Now that we've frozen water into all these interesting shapes, which of them do you think will melt most quickly? Let's write down our predictions. How can we find out if we're right?" Let children make their own predictions, try things out, and note what works and why.
- use words to describe your actions and the children's actions: "I'll pour this water into the cup of cornstarch as you stir. Let's observe what happens as we try to pick up the interesting mixture we've just made. Is it more like a solid or a liquid?"

NAEYC, *Young Children*, November, 2009, p. 10.

Classroom environments that foster scientific learning:

- stimulate children's curiosity
- promote learning through inquiry and observation
- encourage children to recognize and solve problems through observation, active exploration, interactions, and discussions with peers and adults
- encourage and provide opportunities for children to gather data through the senses
- stimulate imagination and creativity
- design experiences to which children respond with wonderment and awe
- find or determine answers to questions derived from curiosity about everyday experiences

(*A Place for Wonder*, Heard & McDonough, 2009, p.5)

How can you find out?



Children's scientific thinking includes:

- wondering and asking questions
- learning from their senses
- observing closely and noticing details
- comparing and sorting by looking carefully
- experimenting by trial and error and testing predictions
- trying over and over
- counting and measuring to make comparisons
- describing, drawing, and writing what they see and think
- collaborating with others to build on each others' ideas

(Curtis & Carter, 2015, p. 143)